

John C. Freeman

Postdoctoral Research Associate on the Collider Detector at Fermilab (CDF)

Fermi National Accelerator Laboratory

Work address

Fermi National Accelerator Laboratory
M. S. 318
Batavia, IL 60510

630-840-3069 (O), 510-717-3245 (C)
jcfreeman2@gmail.com
www-cdf.fnal.gov/~jcfree

Education

- **2000-2007: The University of California at Berkeley** Berkeley, CA
 - Ph.D. received Dec. '07
 - Thesis title: *A Measurement of the Top Quark Mass in 1.96 TeV Proton-Antiproton Collisions Using a Novel Matrix Element Method*
 - Thesis advisor: Dr. James Siegrist
- **1996-2000: Columbia University** New York, NY
 - Bachelor of Arts in Physics (Magna Cum Laude)

Research Experience

- **2007-present, Postdoctoral Research Associate, FNAL** Batavia, IL
 - Work on cosmology simulations in a parallel computing environment
 - Convener of the CDF Offline Group
 - Developed a multivariate discriminator to detect b quarks, improving the relative identification efficiency over CDF's previous discriminator by 40%. This was a six-month project and improved Higgs signal sensitivity by approximately 10%
 - Convener of the CDF High- P_T b -Tag Group
 - Set world's best limits on anomalous $Z\gamma$ couplings
 - Performed studies and maintenance of the CDF silicon detector with a focus on radiation-induced aging
- **2001-2007, Graduate Research Assistant, LBNL** Berkeley, CA
 - Measured the top quark mass in the lepton + jets decay channel
 - Wrote and maintained software used during construction of the ATLAS pixel detector
- **1997-1999, Undergraduate Research Asst., Columbia Univ.** New York, NY

- Summer-Fall '99: Intern, PHENIX experiment (Brookhaven National Laboratory)
- Summer '98: Intern, PHENIX experiment (Nevis Laboratory)
- Summer '97: Intern, ATLAS experiment (Nevis Laboratory)

Teaching Experience

- 2009-present, work with undergraduate and HS students on aspects of my research
- 2000-2001, Graduate Student Instructor, UC Berkeley, Physics 8A (“Introductory Physics”)

Honors

- John Jay Scholar, Columbia University, 1996-2000
- Phi Beta Kappa, 2000
- National Merit Scholarship Semifinalist, 2000

Publications

CDF publications in refereed journals have an Author's List, consisting of the active collaborators; a list of such publications with my name included in the Author's List can be provided upon request. Only a selection of publicly released documents I've contributed to significantly are listed here.

- J. Freeman *et al.* “Introduction to HOBIT, a b-Jet Identification Tagger at the CDF Experiment Optimized for Light Higgs Boson Searches.” Nucl. Instrum. Meth. A, Vol. 697 (2013), pp. 64-76.
- J. Freeman *et al.* “An Artificial Neural Network Based b-Jet Identification Algorithm at the CDF Experiment.” Nucl. Instrum. Meth. A, Vol. 663 (2012), pp. 27-37.
- T. Aaltonen *et al.* “Limits on Anomalous Triple Gauge Couplings in $Z\gamma$ Events from $p\bar{p}$ Collisions at $\sqrt{s} = 1.96$ TeV.” Phys. Rev. Lett. **107**, 051802 (2011).
- T. Aaltonen *et al.* “First Observation of Vector Boson Pairs in a Hadronic Final State at the Tevatron Collider.” Phys. Rev. Lett. **103**, 091803 (2009).
- T. Aaltonen *et al.* “Top Quark Mass Measurement in the Lepton plus Jets Channel Using a Modified Matrix Element Method.” Phys. Rev. D. **79**, 072001 (2009).
- J. Freeman and the CDF Collaboration. “CDF Measurement of the Top Mass in the Lepton + Jets Channel Using the Multivariate Template Method.” In *Published Proceedings DPF 2004: Annual Meeting of the Division of Particle and Fields of the American Physical Society (APS)*, August 2004.

Conferences Attended

- “Electroweak Physics at the Tevatron and LHC,” Plenary Talk, American Physical Society April Meeting, Washington, D.C., February 13-16, 2010.
- “Top Quark Mass Measurement in the Lepton+Jets Channel Using a Multivariate Technique at CDF,” American Physical Society April Meeting, Jacksonville, FL, Apr. 13-17, 2007.
- “Top Quark Mass Measurement in the Lepton+Jets Channel Using a Multivariate Technique,” American Physical Society April Meeting, Dallas, TX, Apr. 22-25, 2006.
- “CDF Measurement of the Top Quark Mass in the Lepton+Jets Channel Using the Multivariate Template Method,” Annual Meeting of the Division of Particle and Fields of the American Physical Society (APS), UC Riverside, Aug. 26-31, 2004.

Programming Languages

- C++ (including experience with STL, Boost and ROOT), C, Python, Perl, HTML, Org, csh, bash